Transform your car into a 2-in-1 product with flexibility services

It is an ice-cold morning in January and the electrical grid suffers from power shortage. Your heat radiator does not work, electricity prices are skyrocketing and – worst of all – you cannot get your morning coffee. However, a solution to this problem might be parked in your driveway, as your electric vehicle (EV) can be used as a flexibility resource.

With the vehicle-to-grid (V2G) technology, electric vehicles have the ability to store electricity in their batteries and later feed it back into the electrical grid. This technology enables the EV to provide flexibility services, i.e. regulate its production and consumption based on the grid's demand. It is believed that flexibility services will be critical in the future electricity systems with higher integration of renewable intermittent energy sources and more electrified industry and transport sectors.

Axess Logistics is a car logistics company handling hundreds of thousands of cars annually, and the share of EVs is increasing every year. Having what is most likely the largest mobile battery in Sweden, Axess Logistics wants to investigate the potential of a concept where electricity is stored in their cars and later traded in flexibility markets. When using V2G to provide flexibility services, the auto industry and energy industry are united.

After mapping the company's storage capacity and putting it in relation to market requirements, it was concluded that Axess Logistics has the potential to participate in several of the existing flexibility markets.

Besides having sufficient available storage capacity, Axess Logistics acknowledges that the introduction of this new concept is not done without challenges. In order to identify barriers and address them proactively, stakeholder interviews were conducted in combination with a thorough document study. Six barriers to the implementation of flexibility services at Axess Logistics were identified:

- Low knowledge regarding V2G and its possible functions
- Uncertainties regarding battery degradation
- Lack of standardisation
- Importance of economic viability for participating actors
- Low end customer demand
- Varying storage volume

While some of the barriers are difficult to influence, others can be addressed by Axess Logistics. For instance, the company can work as a knowledge hub providing stakeholders with information and hence lower the threshold for participating in the concept.

In summary, it was concluded that the EVs at Axess Logistics have the potential to provide flexibility services – although there exist some barriers. The need of flexibility will most probably increase as intermittent energy sources become more integrated in the electricity production. Soon your car will be not only a means of transportation but also an integral part of a well-functioning electricity system.

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